

ARCH CAPE SANITARY DISTRICT MINUTES

20 August 2021

A ZOOM video teleconference broadcast was held in light of the COVID-19 pandemic. A quorum was present.

Sanitary Board: Darr Tindall, President (in Zoom video teleconference)
Debra Birkby, Vice-President & Treasurer
Chris Anderson
Jay Blake
Bill Campbell

Water Board: Dan Seifer (non-voting)
Linda Murray (non-voting)

Public: Curt McLeod, Senior Principal Engineer, Curran - McLeod, Inc.

Staff: Phil Chick, District Manager
Steve Hill

Ms. Darr Tindall called the meeting to order at 6:02 pm, indicated that we were remote due to Covid and thanked everyone for attending. Mr. Hill called the roll. For video teleconference assistance they could reach Mr. Phil Chick at 503-739-2348.

Public Comment: None.

Agenda: Add IGA. Mr. Blake moved acceptance of the agenda as amended which was seconded by Mr. Anderson. All in favor. Motion carried.

Consent Agenda: Mr. Anderson moved acceptance of the consent agenda which was seconded by Mr. Campbell. All in favor. Motion carried.

Old Business:

Webb Lift Station: (Information) Mr. Curt McLeod spoke to the board about his pre-design report. He said the pre-design plan was based upon a full build out in the district of 485 and that all waste water goes through the Webb station. It's based upon a 1975 or 1976 public right of way and that the drive way to the Darrough home would be maintained. We will use the same location, the existing wet well but build a new wood framed structure expanding it to the east with an expected capacity of the upgraded station of 300 to 400 gallons per minute and will have to replace the pumps.

Efforts should be made to improve Inflow and Infiltration in the collection system.

The estimated cost is \$300K and we would use a variable frequency drive. There is the possibility of a FEMA hazard mitigation 'resiliency' grant from late September to late January of next year. IFA Business Oregon could provide a 20% forgivable loan.

Mr. McLeod said that the most important thing to do now is to secure the funding. There would be seventy-five days for bidding the project and would be operational by winter of 2022.

Discussion ensued regarding pipe size for the build out as well as pump capacity trade offs. A declared goal would be to fit the design of the new building to the existing Darrough home.

Wastewater Plant Access: (Information) Mr. Chick said that we now have a new neighbor and that we would need to work out an easement.

Covid-19 Emergency: (Information)

Mr. Hill reported that accounts receivable were strong.

2022-23 Budget & Long Range Financial Plan Schedule: (Information) This process will be coming up in the fall.

New Business:

IGA: (Information) Mr. Campbell lead a general discussion focusing on the existing time log and how it's modification could lead to useful trending analysis of employee tasks.

Reports:

District Managers Report and Correspondence for Action: (attached)

Treasurer's Report: Ms. Birkby reported some reconciliation progress up to June of this year. Funds on hand at month end in the Columbia Bank checking account were \$102,918 and in the Local Government Investment Pool of \$184,843.

Board of Directors' Comments and Reports: None.

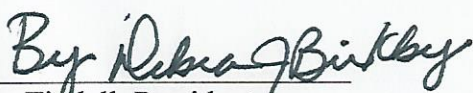
September Agenda Items: Webb Lift Station, Covid-19, and LRFP.

Public Comment: None.

The meeting was adjourned by Ms. Darr Tindall at 6:45 pm.

Respectfully submitted,


Steve Hill

Attest 
Ms. Darr Tindall, President

DRAFT FOR DISTRICT REVIEW

Arch Cape Sanitary District

WEBB AVENUE PUMP STATION IMPROVEMENTS PREDESIGN REPORT

July 2021

The Arch Cape Sanitary District serves the unincorporated community of Arch Cape located at the southern end of Clatsop County, bounded to the east by the Coast Range Mountains and to the west by the Pacific Ocean. The Arch Cape community is largely residential with three commercial properties. Most residences are second homes with fewer than 100 homes occupied year-round. The characteristics of any vacation setting is that there can be substantial seasonal changes in utility use.

The community is served by a gravity sanitary sewer collection system and four pump stations: North, Asbury Creek, Sally's Alley, and Webb Avenue. All flow to the treatment facility is ultimately routed through the Webb Avenue Pump Station to the treatment plant.

A facility plan for the District was prepared in 2005 which resulted in construction of a new membrane treatment facility with capacity to serve buildout of the community.

1. EXISTING PUMP STATION

After 23 years of service, the Webb Avenue Pump Station warrants improvements due to deterioration of the facility resulting from the harsh coastal environment and increasing sewage flows from residential development in the District.

The Webb Avenue pump station is located at the intersection of East Beach Road and Webb Avenue, approximately 240 feet east of Highway 101 and receives all of the wastewater from the Arch Cape District. All wastewater enters the station through a single 8-inch gravity sewer line.

The station consists of a 6-foot diameter concrete wet well with duplex submersible pumps, and a standby generator housed in an adjacent wood-framed structure. Sewage is pumped to the WWTP headworks through a 6" AC force main.



Webb Avenue Pump Station

In 1999, the pump station was rebuilt with new pumps, valving, piping, and control system. The submersible pump impellers were replaced in August 2014, increasing pump capacity to 335 gpm (0.482 mgd) utilizing the available remaining pump horsepower without overloading the motor. With both pumps running the pump station is capable of discharging 0.583 mgd (405 gpm), according to the District.

The design of the existing pump station is shown in the following table.

Existing Webb Avenue Pump Station

Pump Station Type	Duplex Submersible
Wet Well	6' Dia x 16.75' Deep
Wet Well Volume	3,000 gallons
Wet Well Operating Volume	1.5 feet (316 gallons)
Overflow Water Level	14 feet
Overflow Point	Manhole 300 feet from Pump Station
Overflow Discharge	Overland to Arch Cape Creek
Average Time to Overflow	8 feet above pump on, 30 min @ Ave flow
Pump Station Inflow (Average)	65 GPM (0.095 MGD)
Pump Station Inflow (Peak)	346 GPM (0.499 MGD)
Level Control Type	Float Switches
Alarm	Local Red Alarm Light
Pump Type	Fixed Speed, Non-clog
Capacity (one Pump)	335 gpm @ 64+/- FT TDH
Capacity (two Pumps)	405 gpm @ 70+/- FT TDH
Pump Motor Size	10 Hp
EPA reliability Class	1
Auxiliary Power Type	Diesel Generator
Generator Size	25 kW
Fuel Capacity	24 hours
Transfer Switch Type	Manual

Force Main		
1	Force Main	6" AC
2	Force Main Length	2,150 Feet
3	Profile	Continuously Ascending
4	Average Detention Time	48 Minutes

Design flow at the Webb Avenue pump station is reflected in the treatment plant flow records. A review of the 2018 – 2021 WWTP Discharge Monitoring Reports' influent flow records showed increased flows and are summarized in the following table:

2018 – 2021 WWTP Discharge Monitoring Reports' Influent Flow Records

Month	2018			2019			2020			2021		
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
Jan	0.106	0.124	0.279	0.078	0.119	0.196	0.129	0.245	0.413	0.108	0.228	0.499
Feb	0.084	0.124	0.189	0.075	0.135	0.362	0.087	0.189	0.468	0.111	0.222	0.417
Mar	0.079	0.124	0.242	0.066	0.084	0.123	0.079	0.114	0.212	0.098	0.143	0.248
Apr	0.088	0.164	0.376	0.081	0.119	0.216	0.068	0.094	0.181	0.070	0.090	0.109
May	0.053	0.078	0.105	0.057	0.075	0.106	0.069	0.098	0.145			
Jun	0.054	0.033	0.087	0.054	0.063	0.071	0.073	0.105	0.137			
Jul	0.053	0.061	0.083	0.058	0.075	0.104	0.080	0.075	0.126			
Aug	0.042	0.054	0.066	0.040	0.061	0.190	0.064	0.073	0.085			
Sept	0.041	0.055	0.107	0.041	0.078	0.142	0.040	0.083	0.268			
Oct	0.044	0.077	0.170	0.061	0.120	0.274	0.085	0.136	0.217			
Nov	0.074	0.132	0.312	0.062	0.089	0.139	0.106	0.200	0.329			
Dec	0.087	0.156	0.372	0.070	0.136	0.444	0.110	0.170	0.370			
Wet Avg	0.089	0.134	0.272	0.077	0.124	0.264	0.083	0.145	0.310	0.101	0.176	0.329
GPM	62	93	189	53	86	183	57	100	215	70	122	228
Dry Avg	0.048	0.060	0.103	0.052	0.079	0.148	0.069	0.095	0.163			
GPM	33	41	72	36	55	103	48	66	113			

The DMR records show daily average wet weather flows from the pump station increased over the three-year period from 0.134 mgd (93 gpm) to 0.145 mgd (101 gpm). In addition, the peak day flow increased from 0.272 mgd to a peak day of 0.499 mgd (346 gpm) in January 2021, requiring both pumps to be in service for a portion of the day to meet incoming flow to the pump station.

These flows result in Average Dry Weather Flow of 420 gallons per connection, with the peak day l/l component estimated at 350,000 gpd.

From the DMRs, peak day events are infrequent. The peak day flow has only exceeded 400,000 gpd four days over the past three years. Additionally, the peak day flows have only exceeded 350,000 gpd 12 times in the past three years. During these

infrequent events, two pumps are required at the Webb Avenue Station for very short periods of the day during peak instantaneous flows.

2. Flow Projections

Portland State University Population Research Center's *Coordinated Population Forecast for Clatsop County, its Urban Growth Boundaries (UGB), and Area Outside UGBs 2020-2070, Figure 1, page 11*, forecasts slow population growth from 2020 through 2045, with the county in general experiencing a 0.2% growth rate.

However, Arch Cape has continued to experience growth through residential development over the last 5 years, with between 2 – 4 new sewer connections per year. There are currently 345 sewer connections. Full buildout of the community is 485 connections based on Clatsop County Planning constraints.

Because all flow enters the treatment plant through the Webb Avenue PS force main, flow projections are the same at the plant and the pump station. An estimated growth rate of 1% annually is reasonable given the historical growth of Arch Cape. Projecting flows of 420 gpd per connection and peak day I/I of 350,000 gpd for the 20-year planning window and buildout is shown in the following table:

Average Annual and Peak Day Flow Projections

Year	Connections	Avg (mgd)	I/I (mgd)	Peak Day (mgd)
2020	345	0.14	0.35	0.49
2025	363	0.15	0.35	0.50
2030	381	0.16	0.35	0.51
2035	401	0.17	0.35	0.52
2040	421	0.18	0.35	0.53
Buildout	485	0.20	0.35	0.55

There are no flow records to indicate the peak instantaneous flow from the Webb Avenue Pump Station. The station has an existing maximum output of 405 gpm with both pumps operating and the single highest flow of record of 0.499 mgd (346 gpm) did not result in any recorded overflow. This equates to a PIF to Peak Day ratio of 1.17.

Peak day flows typically occur with a rainfall event that extends over several days, and the flow rate would be expected to be relatively constant for the duration of the peak day. As a result, the peak instantaneous flow is estimated to be nearly comparable to the peak day flow.

The PIF is dampened by storage within the collection system and pump station wet well, and the flow to the plant is always only equal to the capacity of the pump. For projecting buildout capacity of this station, the peak day flow and peak instantaneous flow are deemed to be very comparable.

It is reasonable to assume any pumps installed in 2021-22 will need to be replaced prior to buildout of this sanitary district. If peak instantaneous flow events indicate larger pumps are required, they can be installed as part of future pump replacement. It is also reasonable to assume the District will continue to make system improvements to reduce I/I contribution in the future. The projected flows in the table above are conservative by assuming the I/I remains constant through buildout of the District.

As a result, the pump design capacity required to serve a 20-year planning window is recommended to be 400 gpm each, with redundancy provided by the duplex pump installation. This flow can support peak day flows through buildout of the District, assuming no reduction of current I/I levels, and provide a 5% allowance for PIF.

3. Existing Treatment Facility Capacity

The treatment facility was upgraded to a membrane bioreactor process in 2007 with two treatment trains with three membrane units in each train. In 2019, the membranes in the existing six units were replaced and the fourth unit was added to each train, increasing treatment capacity by approximately one third.

The following table lists the current plant capacity at 10 degrees C and current recorded flows, and the projected buildout flows based on 485 connections:

Plant Capacity and Buildout Flow Projections

	<i>Current Plant Design Capacity (mgd)</i>	<i>Current Record Flows (mgd)</i>	<i>485 Connection Buildout Flow (mgd)</i>
ADWF	0.305	0.145	0.203
MMWWF	0.345	0.228	0.320
PDAF	0.467	0.499	0.550
PIF	0.656	0.583	0.576

The capacity of the treatment facility will support buildout conditions without further expansion. Over the time period required to achieve buildout of the community, the District should continue to reduce I/I whenever possible to reduce the projected peak day flow to avoid approaching the plant capacity limits, although peak day events are very infrequent.

4. Pump Station Improvements

Pump station improvements will include installation of two new submersible pumps with a capacity of 400 gpm each, at approximately 100 Ft TDH; new pump station controls with variable frequency drives (VFDs) to better stabilize flow to the treatment facility; and a new standby generator located in a new generator/control building. The existing wetwell will be inspected for deterioration and repaired as needed.

A review of pumps and pump curves considered for the pump station improvement during the preliminary design typically have a minimum flow of 100 gpm when operated as variable speed pumps. This will result in the pumps cycling on and off frequently during dry weather low flows. The pumps will be controlled by VFDs which will allow for frequent motor starts without damaging or reducing the motor life.

The existing force main is adequate for the increased flows with a maximum velocity of 4.5 fps at 400 gpm, however, preliminary design calculations indicate the increase in dynamic losses will require the horsepower to be increased from the current 10 Hp motors.

The standby generator is proposed to be housed in a new wood framed structure that can provide an architectural appearance similar to the adjoining residence. The station controls will be housed in the structure, although the available right-of-way may limit the size of any proposed structure at this site. Additional easement area may be needed.

Bypass pumping will be required to keep the station in service during construction.

5. Project Cost Estimate

Total project cost is estimated at \$300,000 as detailed on the following page. Some cost reductions can be achieved during the design process related to the building and general mechanical improvements. Operations of the new station should be less than the current station operating cost due to newer and more efficient equipment, which initially will handle the same current flow loadings.

Maintenance costs for the rehabilitated station will be substantially lower than the existing station; however, maintenance funds should continue to be collected and placed in a reserve account to repair and replace equipment when needed in the future.

ARCH CAPE SANITARY DISTRICT
Webb Ave Pump Station Rehabilitation Estimate of Cost
July 2021

	<i>Quantity</i>	<i>Units</i>	<i>Cost</i>	<i>Total</i>
Mechanical				
Demolition	1	LS	\$10,000	\$10,000
Bypass pumping	1	LS	\$5,000	\$5,000
Pumps	2	EA	\$18,000	\$36,000
Miscellaneous piping	1	LS	\$5,000	\$5,000
Misc Mechanical Improvements	1	LS	\$5,000	\$5,000
Concrete/footings/base rock	1	LS	\$5,000	\$5,000
Generator Building	1	LS	\$60,000	\$60,000
Subtotal Mechanical			Subtotal	\$126,000
Electrical/SCADA				
Demolition	1	EA	\$5,000	\$5,000
Level Controls, transducer & Floats	1	LS	\$3,000	\$3,000
Conduit/Wiring/Grounding System	1	LS	\$10,000	\$10,000
Standby Generator/Fuel Tank	1	LS	\$40,000	\$40,000
Pump disconnect Panel	1	LS	\$8,000	\$8,000
Pump Control Panel	1	LS	\$35,000	\$35,000
Telemetry System	1	LS	\$4,000	\$4,000
Subtotal Electrical/SCADA			Subtotal	\$105,000
Construction Total				\$231,000
Mobilization, Bonds & Insurance (5%)				\$11,550
Engineering, Legal, Admin & Contin (25%)				\$57,450
TOTAL PUMP STATION REHABILITATION COST				\$300,000

Manager Report August 20th, 2021

SANITARY DISTRICT:

We received .60" inches of rainfall in July and the plant received 2.2 million gallons of influent.

A new sewer service was installed at 79908 Anvil Rock Rd. in August.

The Ford dump truck is in the repair shop again for a fuel pump issue.
Ed's Septic had to pump biosolids the week of 8/9.

The Spruce Ridge development on Marshall Ln. will be having utilities installed starting this month. Bob McEwan Construction is the contractor. Approximately 550 feet of 8" sewer main will be installed, in addition to 4 manholes and 7 sewer services.

The District's National Pollution Discharge Elimination System (NPDES) permit required by Oregon DEQ is up for renewal again, and I have started working on the various requirements for renewal.

Computer Support and Services is doing some IT upgrades at the Water and Wastewater Plants for network security.